

**IN THE CLAIMS**

1. (Previously Presented) A process for immobilizing nucleic acid molecules on a substrate, comprising the steps of:

a) treating said substrate with atomic oxygen plasma prior to immobilizing said nucleic acids; and

b) immobilizing said nucleic acid molecules on said treated substrate,

wherein said substrate is a single crystal surface or an amorphous surface selected from the group consisting of silicon oxides, aluminum oxides, sapphire, perovskites, and derivatives and stabilized and/or doped derivatives thereof.

2. (Previously Presented) The process according to claim 1, wherein the nucleic acid is selected from the group consisting of DNA, RNA, PNA, CNA, RNA, HNA, p-RNA, oligonucleotides, oligonucleotides of DNA, oligonucleotides of RNA, primers, A-DNA, B-DNA, Z-DNA, polynucleotides of DNA, polynucleotides of RNA, T-junctions of nucleic acids, domains of non-nucleic acid polymer-nucleic acid blockpolymers and combinations thereof.

3. (Previously Presented) The process according to claim 1, wherein the nucleic acid is double-stranded or single-stranded.

4. (Previously Presented) The process according to claim 1, wherein the nucleic acid is of natural character, modified, such as substituted with functional groups, non-modified or artificially generated.

5. (Cancelled).

6. (Cancelled).

7. (Previously Presented) The process according to claim 1, wherein microwave generated oxygen plasma producing atomic oxygen from an oxygen gas or from a mixture of gases containing oxygen is used.

8. (Previously Presented) The process according to claim 1, wherein high-voltage generated and/or UV-light emitting source generated oxygen plasma producing atomic oxygen from an oxygen gas or from a mixture of gases containing oxygen is used.

9. (Cancelled).

10. (Previously Presented) The process according to claim 1, wherein the atomic oxygen plasma treatment is carried out using an oxygen pressure in the range of about 0.1 to 1.0 mbar.

11. (Previously Presented) The process according to claim 1, wherein the nucleic acid to be immobilized on the substrate is present in an aqueous solution.

12. (Previously Presented) The process according to claim 11, wherein the substrate is treated with said aqueous solution for about a few seconds to about 5 minutes.

13. (Cancelled).

14. (Cancelled).

15. (Previously Presented) The process according to claim 1, wherein the perovskites are selected from the group consisting of  $\text{SrTiO}_3$ ,  $\text{LaAlO}_3$  and  $\text{ZrO}_2$ .

16. (Previously Presented) The process according to claim 10, wherein the pressure range is from about 0.2 to 0.8 mbar.

17. (Previously Presented) The process according to claim 12, wherein the substrate is treated with said aqueous solution for about 1 to 2 minutes.

18. (Previously Presented) The process according to claim 1, wherein the substrate is treated with atomic oxygen plasma for about 0.1 to 10 minutes.